Amendments to the Specification:

1) The following amendments to the Specification include three (3) new paragraphs. Please add the following three (3) new paragraphs listed in sequence below to their respective position in the specification.

Please add the following paragraph after paragraph [0357]:

[0357.1] In this specification: the terms "frontend", "front-end", and "front end" are used interchangeably; the terms "backend", "back-end", and "back end are used interchangeably; and the terms "right-click" and "right click" are used interchangeably.

Please add the following paragraph after paragraph [0547]:

[0547.1] The benefit of using the relative price axis approach of FIGS. 48–49 and FIGS. 51–52 is that it allows different securities trading or quoted at different prices to be plotted and simultaneously visible on a common grid along with the user's associated open orders for each security in close proximity. An absolute price axis, for example the price axis 102, may be used to plot the last trade price or a quote price from multiple securities, however, securities trading or quoted in a wide price range and their respective open orders may not be simultaneously visible in the price range shown on the common grid. FIG. 50 shows one approach that can be used to plot the prices of multiple securities on a common grid using an absolute price axis.

Please add the following paragraph after paragraph [0555]:

[0555.1] For example, the method depicted in FIG. 53b is used when market data from the 0.01 price increments in grid 120 of FIG. 10 is mapped to the .05 price increments shown in grid 122 of FIG. 11.

2) Please replace the original paragraphs filed with the application with the following amended paragraphs listed in sequence below and identified by their original paragraph number:

[0311] FIG. 10 shows ~~atypical~~ a typical grid representation of data displayed at a trader's graphical user interface computer display;

[0313] FIG. 12 is ~~atypical~~ a typical computer monitor display at a ~~traders~~ trader's location, showing various kinds of data;

[0341] FIG. 40 is a representation of the settings which may be established when the Position Guide ~~block~~ settings button 131 from FIG. 12 has been chosen;

[0344] FIG. 43 shows a dialog box in which special terms criteria may be set for any transaction;

[0359] In the prior art system of FIG. 2, the system 21 includes a web-based ~~application~~ application, which presents a ~~web-based~~ browser-based front end.

[0362] Of ~~course a,~~ course, a system such as that shown in FIG. 2 is easy to deploy, manage, and maintain, if it is web-based because of its centralization at the premises of the respective broker.

[0363] If a proprietary front end is used, that system involves the installation of application software at the local computer employed by the trader. Those systems tend to be somewhat faster and more graphical, and they may be more interactive than strictly web-based applications, because the application is run locally. Of course, as with any locally installed software which is located at a desktop computer, or even on a small local area network operated by the trader, the software is prone to installation and maintenance problems, file corruption, version conflicts, and upgrade problems.

[0380] A more detailed quote is also available. The detailed quotes disseminated by the NASDAQ stock market are called "NASDAQ Level II", or simply "Level II" quotes. This type of quote is of interest to more active traders, because it allows them to track the activity of market makers that they believe to be ~~price-trend-setters~~ price trendsetters. It also allows those with the capability[[,]] to buy and sell their ~~posit ions~~ positions quickly[[,]] when it becomes apparent from Level II information that the momentum of the markets has turned against them. With a Level II display, the identity of market makers and ECNs is disclosed and order information on either side of the bid and ask are visible. However, not all exchanges or markets provide order or quote information that allows a trader to view this detailed type of quote for all securities.

[0381] Still more detailed[[,]] are market book quotes, which are order and quote information provided by some Electronic Communications Networks (ECNs) such as Island ECN and Archipelago, and stock exchange such as the Toronto Stock Exchange (TSE), which can display buy and sell orders individually listed on the ECN's or an exchange. The market books lists buy and sell orders, the number of shares in each order, and the prices offered. Orders are listed according to price and in time priority, so orders displayed close to the bid and ask on the list will be executed before orders further away in the list.

[0389] Take, for example, a hypothetical stock with a bid price of 45 1/4 and an ask price of 45 ~~{fraction (5/16)}~~ 5/16. The spread between the "bid" and the "ask" is ~~{fraction (1/16)}~~ 1/16 or 6.25 cents per share. In contrast, when stocks trade in penny increments, the number of price points per dollar is 100, meaning that the bid and ask prices can be closer together.

[0390] A smaller minimum price variance (MPV) will be possible as a result of the US exchanges and stock markets adopting a decimal format. Prior to decimalization, many US equities were traded and quoted at an MPV of ~~{fraction (1/16)}~~ 1/16 or 6.25 cents, meaning there are sixteen price points or "ticks" per dollar. Option prices over $3.00 have an MPV of 1/8, allowing eight price points per dollar. With decimalization, option prices are expected to trade in ~~5-cent~~ 5-cent increments under $3.00, and in 10 cent increments above $3.00.

[0400] One important benefit of the middleware 42 is that it enables the market participant 36 to supplement the base functionality of its existing backend trading system 44 with new, value-added functionality. Thus, a set or series of backend operations maybe grouped into "virtual" operation. An example of this is an order amendment transaction, which will be described hereafter. In existing trading systems, an "order amendment" transaction requires that the user go through a two-step procedure: first, the original order is cancelled; then, a new order is issued. With the middleware 42 in place, a single virtual operation – the order amendment operation – can be invoked by a trader. The middleware translates the single virtual operation into the ~~appropriately~~ appropriate series of trading instructions ~~require~~ required by the ~~back-end~~ backend trading system 44.

[0401] Of course, incorporating a series of operations into a single "virtual" operation is the responsibility of the respective market participant 36, and is transparent to the end user – the user or trader whose location includes a front end 32. The market participant 36 can offer the resulting "virtual" operation to its customers as ~~anew~~ a new type of transaction, and customers can make use of this new transaction just like any other type of transaction.

[0408] Typically, the front end 32 operates on a ~~Windows.RTM.®~~ Windows platform, but not necessarily. Other platforms may also be employed, including ~~LINUX.RTM.®~~ Linux, and other proprietary platforms.

[0412] Unlike some monolithic Windows applications, which put together all functionality in a single package, the front end of the present invention leverages the power, ease of use, and the flexibility of using Microsoft's COM component technology. COM allows the front end to organize functionality into multiple, independent, reusable software building blocks called "components" or "objects". ~~(Note: although~~ Although there is a difference between these two terms – a component is made up of one or more objects – ~~and~~ the two terms are used interchangeably ~~herein.)~~ herein. Each of these components or objects encapsulates distinct software functionality, and interacts with other components through clearly defined programmatic interfaces.

[0417] The most important software object is the grid graphical object 52. It displays Level II quotes in a two-dimensional matrix of multi-colored cells, which it constructs dynamically. The grid graphical object receives its data in real-time (or close to real-time) from a quote server (not shown) which resides on the backend trading system 44; the data however, passes through the object layer 48 and the communication layer 50 first. The grid graphical object 52 also implements the graphical placement and modification of orders using a "drag-and-drop" mechanism.

[0420] The ~~account~~ accounts and holdings graphical object 60 is another compound object that displays summary and detailed information about an account. This information includes the account balance, order status, account summary, etc.

[0421] Each of the three graphical objects described has a counterpart object in the object layer 48. The grid graphical object 52 has a quote source object counterpart 62, which encapsulates the logic necessary for requesting and receiving Level II data from the back-end trading system. The order entry graphical object 56 has an order entry object counterpart 64, which implements the logic and business rules necessary for posting orders to the backend trading system, via the middleware 42. The ~~account~~ accounts and holdings graphical object 60 has an ~~account~~ accounts and holdings object counterpart 66, which implements the logic necessary for requesting, receiving, and updating account information from the back-end trading system.

[0422] The communication layer 50 has one or more objects that implement the logic involved in translating requests and commands coming from the upper layers of the front end 32 into the format expected by the middleware 42. This format conforms to a standard protocol, which is based on XML. The communication objects also translate the data coming from the backend trading system 44, through the middleware 42, into the format expected by the objects in the upper layers of the front end 32. In FIG. 5, there are two communication objects: the Winsock communication object 68, which implements the logic for remote communication using the Winsock protocol, and the SOAP communication object 70, which implements the logic necessary for remote communication using the SOAP protocol.

[0424] Before turning to a discussion of the graphical display which is presented by the present invention, ~~and~~ as shown in FIGS. ~~10~~ 3 to ~~53~~ 55, and so as to better understand the purposes and objects of the present invention, its operation, and its functions, several other Figures are presented – FIGS. 6 through ~~9B~~ 9 and are now discussed in terms of the present invention and the discussion which has gone on before. These discussions are, of course, for purposes of clarity and explanation, and are not intended to be limiting.

[0431] The account management subsystem 84 consists of three modules: (1) a login verification module 86, which handles authentication of users logging in to the backend system; (2) an account creation & maintenance module 88, which handles the creation, deletion, and management of online trading accounts; and (3) a portfolio management module 90, which handles the portfolios associated with the accounts managed by the account creation & ~~management~~ <u>maintenance</u> module 88.

[0437] It will be recalled from discussion above with reference to FIG. 4, for example, that the front end 32 is capable of interfacing with diverse backend trading systems 44. This includes any system that can: (1) manage online trading accounts, (2) publish ~~quotes~~ <u>quotes,</u> (3) receive orders, (4) execute orders, and (5) provide feedback to the trader on the status of his/her orders. The middleware 42[[,]] makes this capability possible.

[0440] A backend ~~securities~~ trading system 44 is a computerized system operated either by an online brokerage firm or an Electronic Communications Network (ECN). It typically consists of the following subsystems: (1) account management subsystem 91, (2) quote publishing subsystem 93, (3) order/transaction processing subsystem 95, (4) order routing subsystem 97, and (5) order execution subsystem 99.

[0443] The quote publishing subsystem ~~91,~~ <u>93</u> (which may also be referred to as a stock quote ~~server)~~ <u>server),</u> broadcasts quotes to subscribers. There are two types of quotes: a basic quote which contain information on a stock's last price, the current bid and offer price for the stock, the change in price from the last trade, opening and closing price, highest and lowest price (for the current trading day), and the volume of stocks traded; the other type of quote is the detailed quote, which contains a listing of the prices quoted by different market participants. The detailed quote can also be categorized into two types: one ~~is the detailed quote~~ that comes direct from a stock market like NASDAQ, whose implementation of the detailed quote is called "Level II"<u>, and one that comes from ECNs or stock exchanges</u>. NASDAQ Level II is a tabulation of the bid and offer prices quoted by NASDAQ Market Makers and ECNs. The ~~other type of~~ detailed quote ~~comes~~ from ECNs or stock exchanges and contains a snapshot of their market books (the queue containing all individual orders submitted to the ECN by its customers, the entries of which are ordered/arranged according to certain business rules).

[0447] As noted, a particular purpose of the present invention is to provide a graphical user interface which may be used by any trader. Typical graphical displays are discussed with respect to screen snap shots shown in FIGS. <u>3, and</u> 10 ~~and~~ to ~~53~~ <u>55</u>, described hereafter.

[0449] Thus, a principal function of the GUI front end is to provide a grid representation of market conditions with respect to any security or group of securities, as discussed hereafter, effectively in real-time. The GUI front end also provides a number of display panels and GUI objects for dynamically displaying trading data, and updating the trading data being displayed. A plurality of grids may be shown, as noted hereafter, in side-by-side arrangement, as well as in tabs where ~~once~~ one grid is hidden behind another in typical fashion well known particularly to programmers and users of Windows software.

[0450] A typical grid is shown in FIG. 10. Here, data for a plurality of market makers are shown in columns 100a . . . ~~100g~~ 100f (being understood, of course, that the number of columns may vary as may be elected by the user, or as dictated by the software, all as described hereafter). A price axis is shown at 102; in this case, the prices are shown varying in one unit intervals (typically, one cent intervals). Of the tabs 104a . . . 104d, each is indicative of a separate grid for a separate security. Tab 104a has been chosen, so that data concerning a hypothetical security identified as XYZ Corp. is shown. Its stock market symbol is shown at text box 106. In a grouping of displayed boxes shown generally at 108, specific data is shown concerning the hypothetical corporation. In particular, the price of the last trade at 56.92 is shown, being up 0.18 or 0.32%. The current bid price for this security is 56.90, and the current ask price is 56.94. The highest trade for the particular trading session in progress was at ~~56.56~~ 57.56; the lowest trade was at 56.10.

[0452] ~~Another box~~ An icon ~~labelled~~ labeled "PG" is shown at ~~110~~ 134, and is described hereafter.

[0455] Any of columns 100a . . . ~~100g~~ 100f can be moved to a different location by selecting the column header and dragging it. They may also be automatically arranged according to some particular criterion, such as the most active market. Other columnar data, particularly aggregate data, are described hereafter.

[0456] ~~Box~~ Text box 106 permits entry of a symbol for any given security, after which the button 112 is clicked.

[0460] It will be noted that each price bin or cell in column 100a in FIG. 11 is filled. That is because there is at least one bid or ask ~~offering~~ order within each increment shown on the price axis in FIG. 11. For example, while there is no activity shown at prices 56.90 up to 56.93 on the price axis 102 shown in FIG. 10, there is activity shown at 56.94 and 56.95, and thus there is ask activity shown in the price bin at 56.95 in column 100a as shown in FIG. 11. On particularly active days, market volatility may require that the trader sees a wider price range than prices that are merely separated by the security's MPV (minimum price variance). In FIG. 10, the price for XYZ Corp. may vary in one unit intervals; thus, each price bin shown in FIG. 11 may hold a multiple of the security's MPV.

[0464] Also shown in FIG. 12 are a number of other tab sets 126, 128, 130, and 132. There is also a Position Guide ~~box~~ settings button ~~134~~ 131 shown in FIG. 12.

[0465] It will be noted that tab set 128 is also shown in FIG. 13, but in a different location than in FIG. 12.

[0468] The Position Guide ~~134~~ will recommend a suitable ~~level~~ quantity of shares to buy or sell, as shown at 262, according to factors such as cash on hand and portfolio value, as described hereafter. A NASDAQ Level II grid 124 is shown, as described hereafter with respect to FIG. 42.

[0471] The significance is that an icon 135 under the symbols column 136 in the tabular format of FIG. 14 can be dragged into its associated grid for a sale or so as to be covered. Likewise, any of the icons shown in FIG. 15 can be dragged and dropped onto the respective grid.

[0476] A similar tab is shown in FIG. 17, also selected from the tab set 128; but in this case, it is the limit order tab 148 which has been selected. A further button, the terms button 150, is shown under the limit order tab 148, which permits the trader to specify order execution terms.

[0477] Another tab, tab 152 from the tab set 128, is shown in FIG. 18. ~~That~~ This is the stops tab or stop order entry tab.

[0479] Yet another tab in the tab set 128 is a change order tab 162, shown in FIG. 19. This tab is employed so as to change the parameters of an open order [[B,]] that is, an order that has already been placed. Here, the order reference number 166 is shown, so as to identify the order which is already in place. The new shares and new price are shown at 168 and 170, with the submit button 172 effecting the change order. Terms maybe set by employing button 174.

[0482] As described above with respect to FIGS. 14 and 15, there is in this case a change column 178 shown in FIG. 20, which permits order parameters to be changed and which allows the order and the underlying security to be displayed on the grid of FIGS. 10 or 11, for example. The change ~~box~~ icon 177 can be dragged onto the grid to a specific price bin, so as to effect a price change or to submit ~~an~~ the order to a different market.

[0485] Referring to FIG. 22, the status bar 180 indicates that there are six open orders; and in this case, a right click on icon 182 has opened a ~~drop-down~~ drop down menu 184, which ~~menu~~ permits open order parameters and terms to be changed or cancelled.

[0492] The price axis 102 may adjust to trading activity automatically or manually. In automatic mode, it will maintain trading activity substantially centered in the middle of the grid by adjusting the displayed price range of the price axis continuously. A smoothing function may be used to prevent the price axis from adjusting itself ~~to~~ too quickly in an active market. In manual mode, the user resets the trading activity to the center of the price axis 102. A buy order cell – such as cell 200 on FIG. 28 – on a fixed price axis 102 will remain stationary as the trading activity moves towards it and eventually fills the order.

[0497] Some users may not be interested in viewing quote activity for individual market participants, as shown in columns ~~100a ... 100e~~ 101a....100e, and may choose to view and enter orders only in the aggregate column 198. Options symbol are entered into the grid ~~198~~ 196 directly, or via the options entry tab 188 (see FIG. 24).

[0498] Turning now to FIG. 28, a representation of a limit buy order is shown. The data shown on the grid 120 of FIG. 28 are the same as those shown in FIG. 10.

[0499] FIG. 28 demonstrates how a buy order cell 200 is located on the grid 120. The buy order for 200 shares of XYZC is a limit order placed at 56.88. This is 0.04 below the last trade price on XYZC, as shown at 202, 201. The market where the order is placed is Island ECN, as noted in the header for column 100a. To distinguish an order from the background quotes, a contrasting texture or color is used. The text inside the order also helps identify the type of order and shares being sold. In a similar manner, a limit sell order may be placed in a suitable market and in the upper portion of the grid representing seller quotes.

[0500] The order is placed on the grid 120 in a number of ways. First, the order will be entered automatically into a suitable grid if it is submitted from an order entry tab such as that shown in FIG. 17. Second, the order can be entered by dragging and dropping from the Position Guide icon 134, which recommends the amount of shares to purchase as well. Third, the order can be dragged and dropped from the holdings tab, as seen in FIGS. 14 and 15, or a similar status tab.

[0501] The orders can be posted to the grid direct from the appropriate entry method, either through the order entry tabs or the Position Guide, with validation to follow; or the orders can be posted after validation from the ~~ex change~~ exchange or market. In the latter case, a delay may occur between the time the order is entered and the time it is validated. In this case, the buy order cell 200 may indicate a non-valid status until the backend system validates the order.

[0502] FIG. 29 is similar to FIG. 28, except in this case the ~~order~~ <u>buy order cell</u> 200 has been routed from one market to a different market at a different price. The original order has been routed to Archipelago ECN in column 100b, and the buy price has been reduced to 56.83. This apparent order change occurs when a selected buy <u>order</u> cell 200 is dragged or routed by the computer's pointing device, such as a mouse or a keyboard cursor arrow, such that the selected buy order cell 200 moves left, right, up, or down, along the grid. The practical effect, from an exchange or market makers perspective, may be to cancel one order, and enter another in a different market, or to change (CFO) one open order to reflect an adjusted price, volume, or other order parameters or terms. This routing of orders between markets, and changing prices graphically, is at the heart of the grid's function.

[0503] FIG. 30 is similar to FIG. 10. However, in FIG. 30, only the bid and ask for each market participant is displayed. The buy order <u>cell</u> 200 from FIG. 29 remains visible. Some users may prefer this view, selected from the grid preferences menu, as it removes movement outside the market and makes open orders stand out.

[0504] FIG. 30 also shows an example of a mouse over effect showing a price axis popup box ~~202~~ <u>205</u>, a quote <u>popup box 203,</u> ~~or~~ order popup box ~~200~~ <u>204</u>, and a market participant popup box 206, so as to result in the display of other relevant ~~information~~ <u>information.</u> At the top of this view, a radio button ~~208,210~~ <u>209,211</u> shows that the tab page can toggle between a grid display of XYZC and a chart of the security.

[0505] FIG. 31 shows a stop loss limit order 208 and 210. In this example, the stop price <u>208</u> is 56.82. When one lot of the security has traded at or below the stop price, the associated limit ~~selt~~ <u>sell</u> order 210 becomes active. Both parameters, the stop price[[,]] and the limit sell price, can be changed by dragging its associated cell. Text inside the order cells help identify the order type, quantity, and function.

[0507] Referring ~~no~~ <u>now</u> to FIG. 3, similar data to that which is shown on FIGS. 28, 29, and 31, is shown. However, in this case, an ~~integrated~~ icon area 301 is included at the right of the grid, showing the status of orders or holdings that are related to XYZ Corporation. The icon area 301 may be considered to be a parking area, in that orders are parked in order that the trader may drag them onto or off the grid 303. One advantage of the icon area 301 is that an order can be dragged off the grid 303, even though the grid may have been cancelled, and held in the icon area 301 so that it can be dragged back onto the grid later as a new order, without having to set up the trade all over again.

[0508] A further feature of the icon area 301 is that multiple orders with respect to the same security may be established. Here, it is seen that there is an intention to buy 200 shares of XYZ Corporation at 56.88, shown at cell buy order 200 just as it is shown in FIG. 28. There is also an intent to sell 500 shares of XYZ Corporation through market participant MM2[[,]] at 56.98, as shown at cell 305. The status of those cells 200 and 305 are shown at icons 307 and 309, respectively, in the ~~integrated~~ icon area 301. However, it will also be noted that icon 311 shows that previously there were 500 shares of XYZ Corporation purchased at 56.26.

[0509] An advantage of the ~~integrated~~ icon area 301 is that icons relative to the specific security may be displayed, whereas the holdings tab as seen in FIGS. 14 and 15 contains information as to all securities which are under consideration. Thus, using a display set up as shown in FIG. 3, the trader can concentrate on a single security, if that is the trader's wish.

[0510] FIG. 33 is somewhat similar to FIG. 27, and in this case it shows a grid 212 for a security[[,]] XYZ Corp., which trades in multiple markets, being represented by an aggregate column 214. The aggregate column combines quotes and order data from multiple market participants 100a . . . 100f into a single column. The aggregate column 214 ~~mayrepresent~~ may represent, for example, aggregate quote data from those market participants available to the trader's brokerage firm to trade on and to submit orders to. The grid's price axis 102 may also be split into two price series to show different price ranges for the same security.

[0512] Turning now to FIG. 35, a grid 220 is shown, which uses the concept of the aggregate column 214 to show a one column view of one or more market participants. The remaining columns 222 and 224 are used to show lot size and order quantity for each price increment. A graphical representation of lot size and order quantity is shown next to the text data[[,]] at 226 and 228, respectively. A replay button 118 is shown, which can animate historical data in a graphical presentation. A right click menu is available over the column name to allow the user to select a data display from specific markets rather than an aggregate representation. For example, the grid 220 and column 214 can represent data only from Island ECN and display the corresponding text 222, 224 and graphical representation 226, 228 of lot size and order quantity, respectively.

[0513] FIG. 36 shows the market column or aggregate column 214 of FIG. 35 rotated 90 degrees, and now presented horizontally at grid 230. Price increments run along the x-axis from left to right. The rightmost cell contains the highest price value. The size of each price bin may be increased to view a larger price range for the security. Direction buttons at each end of the grid 230 allow the grid's price axis ~~230~~ to be scrolled left or right. The cell values at the endpoints 232, 234, the bid and ask 236 and 238, and the last trade 240, are all indicated and linked to their representative cell. Open orders are also shown, in this case at 242, above the grid 230.

[0514] A Position Guide <u>icon</u> 134 allows orders to be dragged and dropped onto any cell that is displayed <u>on the grid 230</u>. In this type of <u>grid</u> display, the bid is shown on the left, and the ask is shown on the right. There is less room to display text inside each cell in this implementation of the grid ~~220~~ <u>230</u>. As a result, buy orders 242, the last trade 240, or a sell order, may be represented by the single letters "A", "L", and "S" within each cell. These cell types may also be represented by specific colors as well.

[0515] Under the grid ~~220~~ <u>230</u>, a chat application 244 allows discussion of a selected security or topic. The integration of the chat application ~~on~~ 244 <u>on</u> the same tab page allows a security to be monitored closely while a <u>chat</u> discussion is ongoing.

[0517] FIG. 38 is similar to FIG. 28, with a representation of a right click menu ~~254~~ <u>255</u> on the buy order. The right-click menu ~~254~~ <u>255</u> is location and context sensitive, and allows the user to view order statistics, change order parameters, adjust price bin size, set preferences, display an aggregate column, and undo a change. The right-click menu ~~254~~ <u>255</u> also allow~~s~~ the user to access the Position Guide <u>icon</u> 134 and the replay feature ~~118~~ ~~of~~ <u>on</u> the grid interface.

[0518] FIG. 39 is a representation of the replay settings tab 256. The replay feature<u>, accessible by selecting replay button</u> 118 provides a graphical ~~payback~~ <u>playback</u> of historical data and trading activity on a grid. If the historical time interval being reviewed is large, the playback speed can be accelerated. For example, if the historical interval being reviewed was originally 60 minutes long, as can be seen by comparing the times for the start and end of the interval to be displayed[[,]] as set at 258 and 260, the user can adjust the playback time period to view this interval at 10 times normal speed which would result in the animation lasting six minutes. Similarly, the animation interval can be fixed for a defined time <u>at 119</u>, for example, 2 minutes, without regard to how long the original historical time interval was. ~~If the historical data or necessary file on the security is not resident on the user's computer, it may be downloaded from a suitable server.~~ The replay application<u>, accessed through replay button</u> 118<u>,</u> uses actual historical quote data to run the animation. The replay feature ~~118~~ works only if there is available archived (historical) quote and order data from the user's computer or from any suitable server. <u>If the historical data or necessary file on the security is not resident on the user's computer, it may be downloaded from a suitable server.</u> The user can elect to store historical data locally through the record function, which will store data on the user's computer's <u>memory or</u> storage means.

[0519] FIG. 40 is a representation of the Position Guide ~~134~~ settings panel 110. The Position Guide icon 134 recommends a quantity of each security to buy or short, based on input from the user on the amount of funds to be invested in each type of security, and the percentage of buying power or portfolio value available to be invested in any trade. Recommendations are rounded up or down to a standard lot size or contract size, as shown at 262. The recommended quantity to be purchased, sold, or shorted can be dragged and dropped from the Position Guide icon 134 (see FIG. 36 for example) to any cell on the grid, for the corresponding security. The Position Guide icon 134 is made available directly on the tab page of each grid by electing to show the Position Guide icon 134 on each tab page.

[0520] Advanced settings button 264 on the Position Guide ~~tab 134~~ settings panel 110 give access to timing tools so that trades that appear technically sound will bias ~~$bias~~ the Position Guide to recommend a higher quantity of the security than trades that appear to have poor or no technical merit. The Position Guide allows the trader to enter limit orders with one or more parameters based on the Position Guide's recommendations.

[0521] FIG. 41 shows horizontal grids 270, 272, 274 for three securities. Each security has its own horizontal grid ~~278,280~~ 270, 272, 274 and Position Guide icons 134a, 134b, 134c, respectively. The top security, XYZ Corp, has two grid rows 276a, 276b associated with it. Each functions independently and provides a display of the security in its own respective price range. ~~Orders~~ Order 278 to sell at 57.50, order 280 to buy at 56.88, ask information, and last trade information 284 can be indicated on both related grids 276a, 276b simultaneously if the price ~~labels~~ range associated with each grid overlap. Each grid allows the price bin to be adjusted independently of the other.

[0522] The middle security is an option series. The Position Guide icon 134b recommendation is based on contracts, not shares. Options above 3.00 trade in MPV of 0.10 increments. There is a sell order 286 at 8.10.

[0524] Turning now to FIG. 42, there is shown conventional NASDAQ Level II display 124, as used by day traders in the US equity markets. Time and sales information is on the right side of the display at 290. Since[[,]] the grid representation of trading and quote activity differs from the NASDAQ Level II view, traders new to the grid view may prefer to additionally monitor securities with NASDAQ Level II displays. To accommodate this need, the tab pages of the grid area can switch between NASDAQ Level II views and grid-based views of the trading activity.

[0525] FIG. 43 shows a representation of the special terms setting dialog box 300. Special terms dictate how the order must be filled. Setting special terms is a common feature of trading applications. Special terms for an open order may be accessed and changed from the right-click menu of an order cell on any grid, as shown at ~~254~~ 255 in FIG. 38.

[0526] FIG. 44 shows a representation of an option chain on a grid 302. The tab name OEY*D, shown at 304, indicates an option chain. The grid arranges the data associated with the option chain to provide a representative display. There are two ~~grids~~ grid sections 306, 308, each with their associated price axis 310, 312, respectively. Bid and Ask prices are displayed for various months, in columns 314a . . . 314f at different price levels. Two buy orders ~~316,318~~ 316, 318 are indicated. The first buy order 316 is to buy 10 contracts of the OEX April 620 calls at 1.30. The second buy order 318 is to buy 5 contracts of the OEX July 620 calls at 2.05.

[0527] The grid drop down menu ~~318~~ 319 allows data for puts, call, or both classes to be displayed. An order status area ~~320~~ 321 allows the user to monitor the status of the open options orders. The option order prices can be changed, by dragging the order cell up or down its respective column. The radio buttons 320, 322 allow the option quote data to be displayed in a table style view[[,]] or on the grid 302. Standard preferences may be applied such as showing contract size in each cell, as a text label. Options data may be filtered to display only the bid and ask of each month to reduce the level of detail. Visual and auditory alarms or notifications can be set to warn the user of a change of status or trading activity.

[0528] Each column contains aggregate data combined from all available options markets. However, a single market, such as the CBOE, maybe viewed on the grid 302 as well.

[0529] FIG. 45 shows an alternative representation of the option chain of FIG. 44. Both Puts 324 and Calls 326 grid sections are displayed in this view. The selection of which class to display is via the put and call check boxes 328, 330 under the grid display radio button 322. The price axes 332, 334 are independent of each other, to optimize the display of relevant quote and order data.

[0530] Changes can be made to the initial layout of the option chain. For example, the month displayed in each put and call column is selected via a right-click selection on the column name, as shown at 336.

[0531] FIG. 46 shows yet another alternative representation of the option chain of FIG. 44. Both Puts and Calls grid sections are displayed in this view at 340 and 342, respectively. Each column 344a . . . 344f represents a different strike price for the month of April. Two limit buy orders ~~350,352~~ 350, 352 are indicated: the first buy order 350 is for 10 contracts of the OEX April 615 calls at 1.55; the second buy order 352 is for 5 contracts of the OEX April 585 puts at 3.30. The price axes 354, 356 for each option class are independent of each other. A right-click on the column heading allows the strike price to be changed, as shown at 360.

[0532] FIG. 47 is a representation of an aggregate column ~~362~~ 214 of quote data and a corresponding NASDAQ Level II type display 364. Orders are entered or adjusted on the aggregate column 214 according to market developments reflected in the Level II type display 364. Although one column ~~362~~ 214 is displayed to represent the aggregate data, the user may elect to show a second column to monitor a preferred market maker, exchange, ECN, or market participant as referred to herein.

[0533] The radio buttons ~~366,368,370~~ 366, 368, 370 ~~on the Figure~~ shown in FIG. 47 allow the trader to alternate views from a multiple column grid, for example, as shown in FIG. 10, to a split grid and Level II view, as shown in FIG. 47, ~~and~~ to a grid and Chart view, as shown in FIG. 37. A further view may include a grid and a chat discussion on the security, as shown in FIG. 36, or news updates.

[0537] The second purpose for the columns 382a . . . 382e[[,]] is to allow open orders to be dragged left or right, away from the main cluster of orders so individual stocks or groups of stocks can be segregated and monitored in relation to the central order cluster. For example, semiconductor sector stocks such as INTC ~~(386)~~ (order 387), AMD (order 388), and MU (order 390) may be dragged along the row to the right edge of the grid so the relative performance of those open orders may be monitored for signs of a deteriorating market or an upcoming rally.

[0542] FIG. 49 shows an alternative representation of a consolidated view of all open orders with the same data as shown in FIG. 48. The relative price axis 386 allows a user to gauge the relative distance of any order from that security's bid or ask price. The first column 414 from FIG. 48 is hidden from view. A Position Guide icon 134 and stock ticker input area 416 above the grid[[,]] allow quote information to be shown, and order quantity recommendations to be made. Dragging from the Position Guide icon 134 to the grid 380 allows the user to drop a buy, sell, or short order for the quoted security onto the grid. Placing the buy order on the BID price row, or below, of the grid designates it to be a limit buy order. Placing the sell order on the ASK price row, or above, of the grid designates it to be a limit sell or a limit short order. Placing a buy order above or on the ask price designates it as a market buy order; and placing a sell order on or below the bid price designates it as a market sell order. The row price bins may be adjusted using the drop down menu 418 near the relative price axis.

[0543] FIG. 50 is a representation of multiple securities quoted in one grid 430 with one price axis 432. The price axis 432 is adjusted in real time to reflect prices for the security assigned to a selected column 434a . . . 434g. In FIG. 50, XYZ Corp is the security of the selected column and the price axis matches trading activity in XYZ Corp. The column name of XYZC is highlighted at 436 to distinguish it as the price axis reference[[,]] and as the selected ~~columns~~ column.

[0544] This representation of the grid 430 makes it convenient to monitor multiple options and equities in a single, simple presentation. It also assists in tracking options prices when the underlying equity changes. The price bin settings adjust to references a specific column displayed so they do not need to be constantly adjusted. The selected column may also be dragged to the left or left aligned automatically so that it is next to the price axis. The Position Guide icon 134 is active and relevant for the selected security.

[0545] The price axis can show absolute values[[,]] or relative values.

[0546] The security of a selected column can be changed by entering a second symbol in the symbol text box 106. Summary information on the security 440 appears on the upper section of the tab page. The tab 442 for IBM is highlighted in the tab set. This is an indication that an event has occurred that requires the user's attention. Such events maybe orders that are filled, a trade through an important price level, or a recent news release.

[0547] FIG. 51 is a representation of a grid 450 consisting of both order cells 462[[,]] and quote cells 452, 454, and 460. Quote cells 452, 454, and 460 each represent a single security, and move on the grid 450 in real time in accordance with a derived difference calculation between two or more parameters. Order cells, for example IBM order cell 462, 462 represent a limit order and can be dragged and dropped on the grid to adjust the order cell price in real time. Order cells are associated with a given security's quote cell. As the quote cell and the order cell move towards each other along the price axis, the order comes closer to being filled. When the order cell and the quote cell are on the same price axis segment, the order has the highest probability of being filled, as it is at the last trade price.

[0548] A selected grouping of stocks chosen from drop down menu 469, may be shown in this grid 450 representation. The stock group Grouping may be an index, industry sector stocks, a user defined list of securities, or a grouping selected on the basis of some technical criteria. The relative price axis 456 can show the difference value between two selected criteria. If a relative price axis 456 is used, the axis can be referenced to the bid, ask, last trade, high, low, open, prior closing price values, or a technical indicator associated with the underlying security, all as shown selected in box drop down menu 463. For example, a security close to its 50 day moving average can have the relative price axis 456 referenced to the 50 DMA value, and the user can monitor the security on the grid 450 to see if it holds the support level or falls under the moving average.

[0549] Two examples illustrate the use of this grid ~~representation~~ 450 representaion. In the first example, assume that a specific value on the relative price axis 456 is derived from the difference between the prior closing price of a security and the last trade price during the current session. The grid 450 shows a quote cell 460 for IBM at negative 0.30 on the relative price axis 456. This is understood to mean that IBM's last trade in the current session is $0.30 below yesterday's closing price on IBM. The buy order 462 on IBM is seen to be $0.50 below yesterday's closing price, and $0.20 below the current last trade of IBM. If IBM falls, the quote cells will appear to fall towards the IBM buy cell 462. If IBM continues to fall through the buy order, the order will be filled and reported as such. If the user feels that IBM will fall significantly past the buy order, the user can drag the IBM buy order 462 down the column in order to lower the buy price for the IBM order as referenced along the relative price axis 456.

[0550] In the second example, assume that a specific value on the relative price axis is the difference between the value of the 50 day moving average (50 DMA) of a stock and its last trade price. In this case, if we look at IBM [[at]] quote cell 460, we would interpret the grid as indicating that IBM is trading $0.30 below its 50 day moving average. The IBM buy order 462 represents a price point of $0.50 below IBM's 50 DMA. If IBM falls in price during the current trading session, the IBM quote cell 460 would fall on the grid towards the IBM buy order ~~for IBM~~ 462. If IBM continues to fall through the buy order 462, the order will be filled and reported as such. If the user feels that IBM will continue to fall further below the current buy price, the user can drag the buy order down the relative price axis in order to lower the buy price for the IBM order.

[0551] Orders can be entered directly from the tab page by selecting a quote cell. The Position Guide icon 134 will display a share recommendation for the selected security, which can be adjusted as desired, and dragged onto the grid to the desired position in relation to the quote cell. A preferences button 464 allows users to customize settings and display options, and to create complex formulae, for the derived price axis value 456.

[0552] It should be understood that the relative price axis 456 value is derived by a price difference between two technical indicators, ~~such as~~ for example a moving average[[,]] or ~~the~~ a prior session's closing price[[,]] and the last trade price of the displayed quote cell for any given security. The two values needed to derive the difference signal can be based on a simple statistic such as the last trade price[[, or]] and the prior closing price. However, the two values can also be based on complex formulae involving multiple variables. With the use of multiple quote cells and groups of securities, general market trends would be more evident in this grid view than in a grid view of a single equity. A falling market would show the majority of quote cells falling on the grid. As noted earlier, the relative price axis 456 values can be locked in position, or float to show the most representative view of all cells.

[0553] FIG. 52 represents a further, more orderly view of a grid with a relative price axis, wherein each column is associated with a unique security. The relative price axis 456 of FIG. 51 remains, as does the input methods (although not shown) to derive the difference value. An order status area ~~460~~ 461 above the grid ~~450~~ 451 allows fills to be reported for easy reference. Securities in a column can be changed by double clicking a column heading 467 or name, and entering an alternative ticker symbol in the text box ~~462~~ 106.

[0554] Quote cells ~~464~~ 465 and any order cells 466 for a specific security are located within a designated column 468a . . . 468f for that security. Each column can contain stocks, options, or other securities. Price quotes used to derive the relative price axis value can be combined from one or more market participants.

[0555] Turning now to FIGS. 53a, 53b, and 53c, there are shown representations of how prices associated with a sequence of rows can be grouped into a single row as the price range visible on the grid is expanded. On the left side of each of FIGS. 53a, 53b, and 53c, there are five sequential rows 531, 532, 533, 534, and 535. For example, as the bin size is changed from 0.01 to 0.05, the price range of the price axis visible on the grid expands. The nominal bin price label 536 of 59.90, shown at the right side of each FIGS. 53a, 53b, and 53c, can be assigned from the price label shown at the top 531a, center 533b, or bottom 535c position of the five rows on the left. Which five values shown on the left side are mapped to a five-cent bin on the right side, and how the nominal price label 536 of the ~~nominal~~ five-cent bin bin is selected, is defined by the user in the user preferences[[,]] or by the trader's brokerage.

[0556] Since orders are usually not entered in increments finer than the Minimum Price Variance (MPV), the basic price range on a grid is based on the MPV. The number of distinct MPV price levels associated with a particular price bin is a function of the specific security, volatility of the security, and the user preference of the ~~font~~ front end. Price bin rows ~~contact~~ contract when a grid is zoomed out to show a birds eye view of trading activity. How smaller rows, such as 0.01 increment rows, map into larger 0.05 bin rows, affects how a bin cell shows a quote or order, and how it does not, as discussed above.

[0560] A software object is a self-contained, re-usable programming construct that encapsulates both data and behavior. Software objects utilized according to the principles of component-based software development facilitate the creation of application programs using pre-built building blocks. This ~~fact~~ approach greatly simplifies software development[[,]] and helps shorten the software development life cycle. Major software vendors like Microsoft Corporation and Sun Microsystems, among others, have adopted and are increasingly promoting ~~scomponent-based~~ component-based software technology. Microsoft Corporation has its Component Object ~~Model(COM)~~ Model (COM), ActiveX, and Web Services technologies, while Sun Microsystems has its JavaBeans, Enterprise JavaBeans, Java applets, and Swing/JFC component technologies.

[0561] A software object implementing the functionality of the "grid-based graphical interface" of the foregoing descriptions is shown in FIG. 54. It will be noted that what is shown in FIG. 54[[,]] is actually a blow-up of the grid graphical object 52 depicted in FIG. 5.

[0566] The Connect process 502 ~~issued~~ <u>is used</u> by the software object to establish connections with one or more data sources, 514.

[0574] Often times, the Data Source 514 and the Market Participant System 516 are one and the same system. This is the case, for ~~example when~~ <u>example, when</u> the Data Source is ~~Island.TM.~~ <u>Island</u> ECN, and the Market Participant System is also Island ECN.